



US005986400A

United States Patent [19]

Staring et al.

[11] **Patent Number:** 5,986,400[45] **Date of Patent:** *Nov. 16, 1999

[54] **ELECTROLUMINESCENT DEVICE
COMPRISING A TRANSPARENT
STRUCTURED ELECTRODE LAYER MADE
FROM A CONDUCTIVE POLYMER**

[75] Inventors: **Aemilianus G. J. Staring; David B. Braun**, both of Eindhoven, Netherlands

[73] Assignee: **U.S. Philips Corporation**, New York, N.Y.

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **08/891,611**

[22] Filed: **Jul. 11, 1997**

Related U.S. Application Data

[62] Division of application No. 08/523,837, Sep. 6, 1995, Pat. No. 5,705,888.

[51] Int. Cl.⁶ **H05B 33/02**

[52] U.S. Cl. **313/503; 313/504; 313/505**

[58] Field of Search **313/498, 503, 313/504, 505**

[56] **References Cited****FOREIGN PATENT DOCUMENTS**

615257 9/1994 European Pat. Off. .

OTHER PUBLICATIONS

J. C. Guatafason et al, "In situ spectroscopic investigations of electrochromics and ion transport in a poly (3,4-athylenedioxythiophene) electrode in a solid state electrochemical cell", Solid State Ionics, 1994, pp. 145-152.

G. Gustafsson et al, "Flexible light-emitting diodes made from soluble conducting polymers", Nature, vol. 357, Jun. 11, 1992, pp. 477-479.

D. Braun, et al, "Photo and electroluminescence efficiency in poly(dialkoxyp-phenyleneimylene)", Synthetic Metals, 1994, pp. 75-79.

E. Staring et al, Photo and Electroluminescence Efficiency in Soluble Poly(dialkylp-phenyleneimylene), Advanced Materials, 1994, 6 No. 12, pp. 934-937.

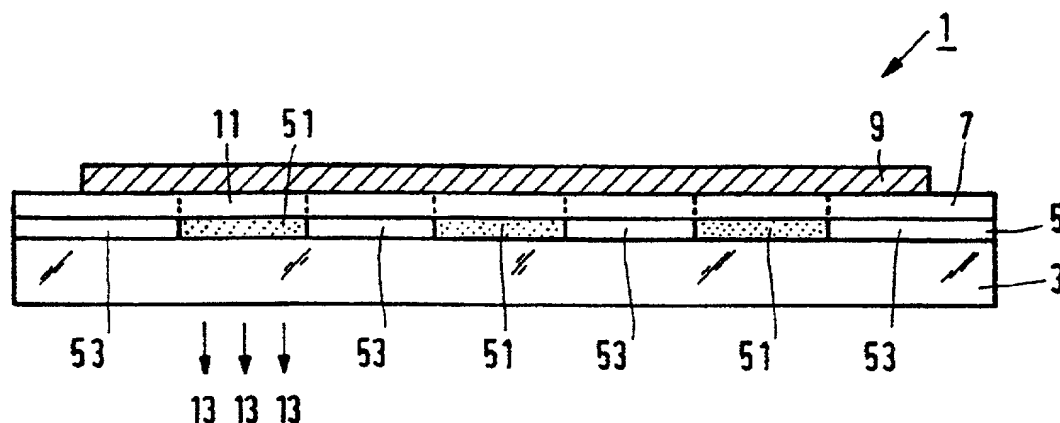
Primary Examiner—Ashok Patel

Attorney, Agent, or Firm—Norman N. Spain

[57] **ABSTRACT**

A description is given of an electroluminescent (EL) device (1) composed of polymeric LEDs comprising an active layer (7) of a conjugated polymer and a transparent polymeric electrode layer (5) having electroconductive areas (51) as electrodes. Like the active layer (7), the electrode layer (5) can be manufactured in a simple manner by spin coating. The electrode layer (5) is structured into conductive electrodes (51) by exposure to UV light. The electrodes (9) and (51) jointly form a matrix of LEDs for a display. When a flexible substrate (3) is used, a very bendable EL device is obtained.

2 Claims, 2 Drawing Sheets



10/053525
11/13/01